ENCODER PRODUCTS COMPANY WESTMOND (PWSNO 1090197)
SOURCE WATER ASSESSMENT REPORT

August 6, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This risk assessment is based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

This report, *Source Water Assessment for Encoder Products Company Westmond*, describes the public drinking water well; the well recharge zone and potential contaminant sites located inside the recharge zone boundaries. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this public water system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Drinking water for Encoder Products Company Westmond is supplied by a single well drawing from a small aquifer in the vicinity of Sagle, Idaho. The water system currently serves an electronics manufacturing plant located just west of Highway 95 near Westmond. The plant employs about 40 people. Historically, Encoder Products Company Westmond has had few water quality problems other than those related to corrosivity. A ground water susceptibility analysis conducted by DEQ April 25, 2002 ranked the Encoder well moderately susceptible to all classes of contaminants, mostly because of natural risk factors associated with local geology.

This assessment should be used as a basis for determining appropriate new source water protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Operation and maintenance of the Encoder water system is mostly in compliance with *Idaho Rules for Public Drinking Water Systems*. The well is located in an open area about 100 feet northeast of the main building on the Encoder property and 200 feet west of the nearest septic drainfield. The well recharge zone DEQ delineated for the Encoder well encloses about 0.98 acre. Encoder is in an advantageous situation for source water protection since the company owns the entire recharge zone delineated for the well, and can manage the land to protect ground water quality.

Some voluntary drinking water protection measures the company should consider involve covering the well head, and fencing the area around it to enhance security and to restrict activity that could inadvertently damage the wellhead or contaminate the groundwater. The system should develop an emergency response plan. It might also be helpful to have a written maintenance and testing schedule so important tasks don't get overlooked when the usual maintenance person is unavailable.

Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. For assistance in developing protection strategies, please contact the Coeur d'Alene Regional office of the Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ENCODER PRODUCTS COMPANY WESTMOND

Section 1. Introduction - Basis for Assessment

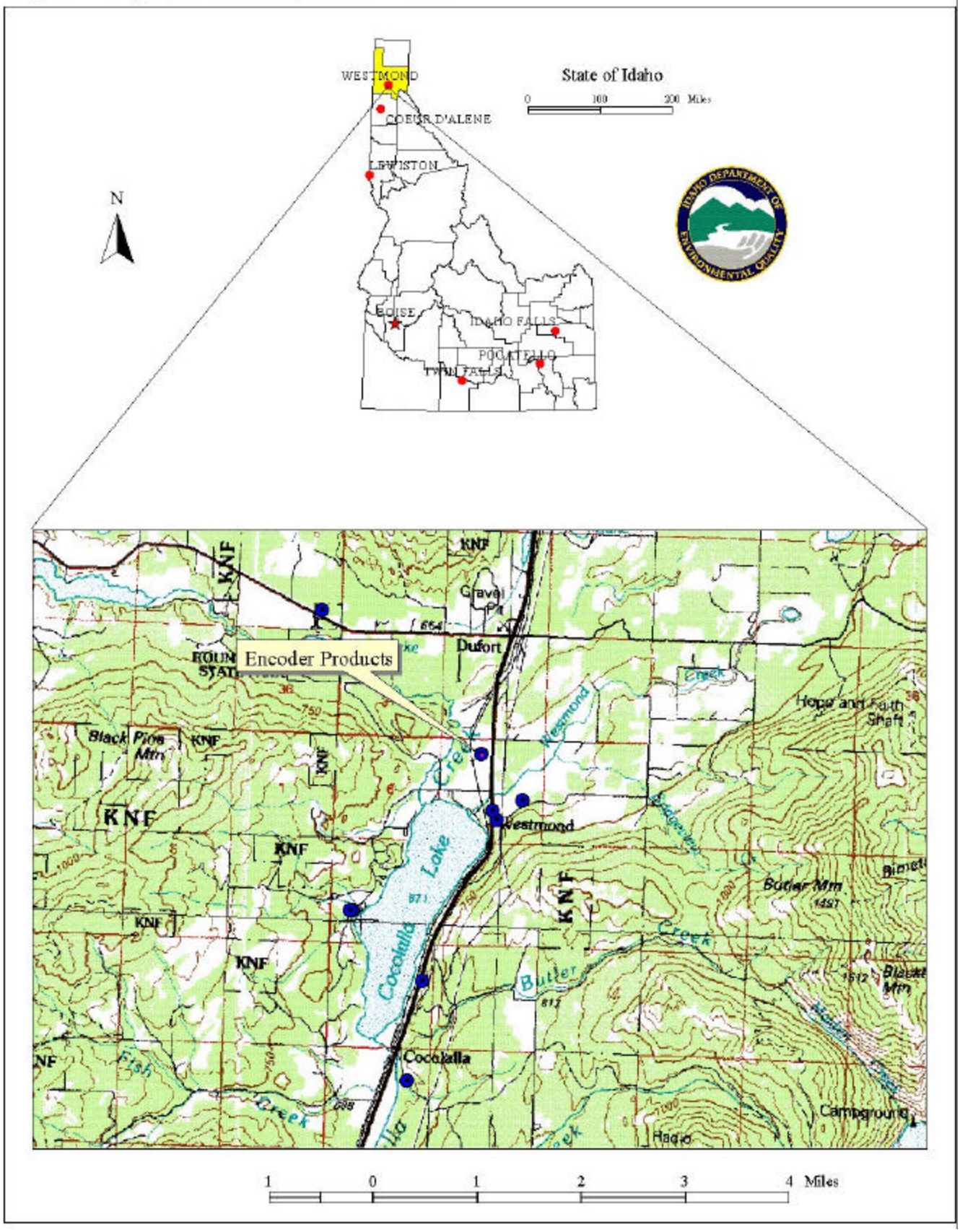
The following sections contain information necessary for understanding how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and an inventory of significant potential sources of contamination identified within that area are included. The ground water susceptibility analysis worksheets used to develop this assessment are attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess every public drinking water source in Idaho for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. These assessments are based on a land use inventory inside the delineated recharge zones, sensitivity factors associated with how the well is constructed, and aquifer characteristics. The state must complete more than 2900 assessments by May of 2003. Because resources and the time available to accomplish assessments are limited, an in-depth, site-specific investigation for every public water system is not possible.

The results of the source water assessment should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system. The ultimate goal of this assessment is to provide data to local communities for developing a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Encoder Products



Section 2. Preparing for the Assessment

Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the well recharge area into time of travel zones indicating the number of years necessary for a particle of water to reach a well. DEQ used a refined computer model approved by the EPA to determine the time of travel (TOT) for the water public water systems pump from the Sagle/Southside aquifer. The computer model used data DEQ assimilated from a variety of sources including local well logs and the report *Steady State Simulation of Nutrient and Contaminant Transport in the Southside Aquifer Near Sagle, Idaho* prepared by J-U-B Engineers, Inc. for Southside Water and Sewer District.

A single well pumping from the Southside Aquifer provides potable water for Encoder Products employees and process water at a manufacturing facility just north of Westmond, Idaho (Figure 1). The 8-inch well was drilled in 1984 to a depth of 100 feet and has a capacity of 50 gpm or more.

The well recharge zone delineated for the Encoder Products Company Westmond well covers only 0.98 acres. The line around the well shown on Figure 2 represents the 10-year time of travel boundary mapped by DEQ's ground water flow model. The outlined area is only slightly larger than the sanitary setbacks required by *Idaho Rules for Public Drinking Water Systems*, so the 3-6 and 0-3 year time of travel zones for the well were not delimited.

Identifying Potential Sources of Contamination

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. Inventories for public water systems in Idaho were conducted in two-phases. The first phase involved identifying and documenting potential contaminant sources inside individual source water assessment areas through the use of computer databases and Geographic Information System maps developed by DEQ. The maps and inventory lists were then sent to system operators for verification and correction in the second or enhanced part of the inventory process.

Figure 2, *Encoder Products Company Westmond Delineation and Potential Contaminant Inventory* on page 7 of this report shows the location of the Encoder Products Company Westmond well, the zone of contribution DEQ delineated for the well, and potential contaminant sites located in the vicinity. Land use inside the delineation boundaries is commercial/industrial.

Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. When a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation.

Section 3. Susceptibility Analysis

The susceptibility to contamination of all groundwater sources in Idaho is being assessed on the following factors:

- physical integrity of the well,
- hydrologic characteristics,
- land use characteristics, and potentially significant contaminant sources
- historic water quality

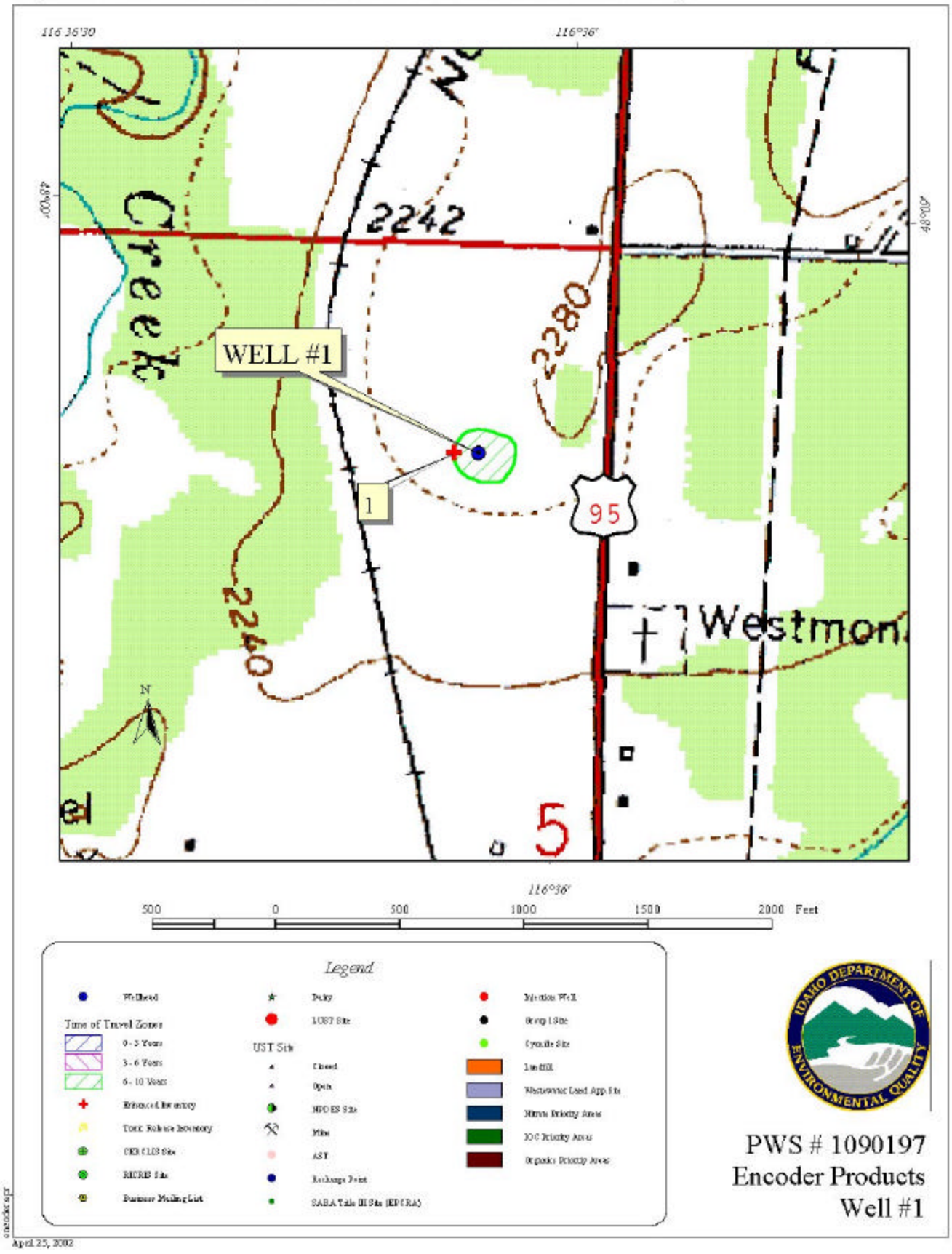
The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking. The Susceptibility Analysis Worksheet in Attachment A shows in detail how the Encoder Products Company Westmond well scored.

Well Construction

Construction methods directly affect the ability of a well to protect the aquifer from contaminants. Lower scores imply a well that can better protect the water. This portion of the susceptibility analysis relies on information from individual well logs and from the most recent sanitary survey of the public water system. The well log for Encoder Products Company Westmond is not on file with DEQ. The last Sanitary Survey of the system was in June 2001.

The Encoder well was drilled in 1984 to a depth of 100 feet. It has an 8-inch steel casing that extends from13 inches above ground to the full depth of the well with perforations in the bottom 10 feet of pipe. The casing is fitted with a vented watertight well cap. The surface seal is 20 feet deep. The static water level in the well is 50 feet below the surface. The June 2001 Sanitary Survey noted no deficiencies in well head and surface seal maintenance.

Figure 2. Encoder Products Delineation and Potential Contaminant Inventory.



Hydrologic Sensitivity

The hydrologic sensitivity score for the Encoder Products Company Westmond well is 6 points out of 6 points possible. This score reflects natural geologic conditions in the recharge zone as a whole and at the well site. Information for this part of the analysis is derived from the soil classification inside the delineation boundaries and from the soil profile reported on the well log.

Soils in the capture zones delineated for the Encoder Products Company Westmond well are generally moderately well drained to well drained. Poorly drained to moderately well drained soils are deemed more protective of ground water than soils which drain faster. At the well site, soils above the water table are an unstratified mixture of sand, gravel, clay and boulders.

Potential Contaminant Sources and Land Use

Land use in the Encoder Products Company Westmond well recharge zone is industrial/commercial. The main building on the Encoder campus is about 100 feet west of the well, which put it just inside the 10-year time of travel zone. A sanitary sewer line crosses the delineation about 50 feet south of the well. The nearest septic tank and drainfield are about 200 feet east of the well and outside of the delineated area. All required setbacks have been met.

Table 1. Encoder Products Company Westmond Potential Contaminant Inventory

Map ID	SITE DESCRIPTION	POTENTIAL CONTAMINANTS[1]	TIME OF TRAVEL ZONE	SOURCE OF INFORMATION
1	Electronics manufacturing	IOC, VOC,	10 Year	Public Water System File

[1] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Historic Water Quality

Historically, Encoder Products Company Westmond has had few water quality problems other than those related to corrosivity of the water. Untreated water from the well is aggressive enough to leach lead and copper from plumbing components. Testing in 1995 indicated that the corrosion control system was not working properly since copper concentrations were above the Maximum Contaminant Level (MCL). Approval for replumbing the potable water system was granted in 1996. Concentrations of copper in samples submitted since 1996 have all been below the MCL. In the period from January 1993 through March 2002 only one routine quarterly sample tested positive for coliform bacteria. Subsequent quarterly tests have been negative. Chemical and radiological monitoring results for Encoder are summarized on the table below.

Table 2. Encoder Products Company Westmond Test Results

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND*	3/2/93 to 12/18/01	Nitrate	10	0.499 to 3.74	3/2/93 to 12/18/01
Arsenic	0.01	ND	3/2/93 to 12/18/01	Nickel	N/A	ND	3/2/93 to 12/18/01
Barium	2.0	ND	3/2/93 to 12/18/01	Selenium	0.05	ND	3/2/93 to 12/18/01
Beryllium	0.004	ND	3/2/93 to 12/18/01	Sodium	N/A	4.4 to 4.97	3/2/93 to 12/18/01
Cadmium	0.005	ND	3/2/93 to 12/18/01	Thallium	0.002	ND	3/2/93 to 12/18/01
Chromium	0.1	ND	3/2/93 to 12/18/01	Cyanide	0.02	ND	3/2/93 to 12/18/01
Mercury	0.002	ND	3/2/93 to 12/18/01	Fluoride	4.0		3/2/93 to 12/18/01
Lead	0.15	0.004-ND	10/3/94-9/21/99	Copper	1.3	2.35-0.02	10/3/94-9/21/99

Secondary and Other IOC Contaminants (Optional Tests)			
Contaminant	Recommended Maximum (mg/l)	Results (mg/l)	Dates
Chloride		2.0	3/2/93
Iron		0.01	3/2/93
Sulfate		2.1	12/18/01
Zinc		0.01	3/2/93

Regulated and Unregulated Synthetic Organic Chemicals		
Contaminant	Results	Dates
29 Regulated and 13 Unregulated Synthetic Organic Compounds	None Detected	8/27/93, 12/8/98

Regulated and Unregulated Volatile Organic Chemicals		
Contaminant	Results	Dates
21 Regulated And 16 Unregulated Volatile Organic Compounds	None Detected	8/27/93, 10/27/98

Radiological Contaminants			
Contaminant	MCL	Results	Dates
Gross Alpha, Including Ra & U	15 pC/l	1.0 pC/l	4/29/94, 10/3/94
Gross Beta Particle Activity	4 mrem/year	0.4 to 50 mrem	3/2/93 to10/3/94

*ND = None Detected

Final Susceptibility Ranking

The Encoder Products Company Westmond well ranked moderately susceptible to all classes of regulated contaminants. Risk factors associated with local geology added the most points to the final susceptibility scores. Final scores and ranking relative to each class of contaminant are summarized on Table 3. The complete analysis worksheet for the well is in Attachment A.

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

The final ranking categories are as follows:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

Table 3. Summary of Encoder Products Company Westmond Susceptibility Evaluation

Final Susceptibility Scores/ Ranking				
	IOC	VOC	SOC	Microbial
Well	10/Moderate	10/Moderate	9/Moderate	10/Moderate

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
HIGH* - Indicates source automatically scored as high susceptibility due to presence of bacteria or a VOC, SOC or an IOC above the maximum contaminant level in the tested drinking water

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Encoder is in an advantageous situation for source water protection. The company owns the entire recharge zone delineated for its well, and can manage the land to protect ground water quality. Operation and maintenance of the Encoder water system is mostly in compliance with *Idaho Rules for Public Drinking Water Systems*. The last Sanitary Survey recommended extending the well casing vent to a minimum distance of 18-inches above ground; installing a flow meter, sample tap and pump-to-waste appurtenances on the well discharge; and testing backflow protection devices annually.

Voluntary well protection measures the system may want to adopt include covering the wellhead and fencing the area around it for security reasons and to control activities that could inadvertently cause contamination. Guidelines for protecting public drinking water systems through increased security measures are available on the DEQ website, www2.state.id.us/deq/water/water1.htm.

The system should also develop an emergency response plan. There is a simple fill-in-the-blanks form available on the website mentioned above to guide systems through the emergency planning process. It might also be helpful to have a written maintenance and testing schedule so important routine tasks don't get overlooked when the usual maintenance person is not available.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at (208) 343-7001 for assistance with wellhead protection strategies.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

Idaho Division of Environmental Quality, 1996. Lower Payette River Agriculture Irrigation Water Return Study and Ground Water Evaluation, Payette County, Idaho. Water Quality Status Report No. 115.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

J-U-B Engineers, Inc., 2001. *Steady State Simulation of Nutrient and Contaminant Transport in the Southside Aquifer Near Sagle, Idaho*.

Natural Resource Conservation Service, 1991. Idaho Snake-Payette Rivers Hydrologic Unit Plan of Work. March 1991.

United States Geological Survey, 1986. Quality of Ground Water in the Payette River Basin, Idaho. United States Geological Survey. Water Resources Investigation Report 86-4013.

University of Idaho. 1986. Ground Water Resources in a Portion of Payette County, Idaho. Idaho Water Resources Research Institute. University of Idaho. Moscow, Idaho. April 1986.

Attachment A

Encoder Products Company Westmond Susceptibility Analysis Worksheet

Ground Water Susceptibility

Public Water System Name : **ENCODER PRODUCTS COMPANY WESTMOND** Source: **WELL #1**

Public Water System Number : **1090197** 4/25/02 1:44:06 PM

1. System Construction		SCORE			
Drill Date	8/27/84				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2001				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**6**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Entire Delineation	Commercial/Industrial	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**2**	**2**	**2**	**2**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	1	1	0	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**2**	**2**	**0**	**0**
Cumulative Potential Contaminant / Land Use Score		**4**	**4**	**2**	**2**
4. Final Susceptibility Source Score		**10**	**10**	**9**	**10**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

BML (Business Mailing List)– This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

Closed Or Open UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.